Outbreak Summary 2001:
A Mixed Bag of Bugs

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The main objective of any communicable disease outbreak investigation is to identify the infectious agent and the causative factors in order to control the outbreak and prevent further disease transmission. Thorough investigations can also monitor emerging trends and provide a knowledge base to prevent similar occurrences in the future. Therefore, outbreaks or clusters of unusual disease incidence are reportable to the Indiana State Department of Health (ISDH) [IAC 410 1-2.3]. Outbreak investigations should be a collaborative effort between the local health departments and ISDH. It is the local health department's responsibility to notify ISDH of the outbreak and to perform the majority of investigative procedures, while the ISDH role is mainly coordination and consultation. In large or complex outbreak situations, the ISDH may provide direct or on-site assistance.

This narrative describes only those outbreak investigations in which the ISDH Communicable Disease Program (CDP) participated. The ISDH Communicable Disease Program investigated a total of 16 outbreaks in 2001 (Table 1), a 50% decrease compared to 2000. Whether this is due to a true decline in the number of outbreaks or to underreporting is unclear.

Four of the reported outbreaks were respiratory, and twelve were gastrointestinal. In addition, one small cluster of meningococcal cases was reported in northeastern Indiana. Of the gastrointestinal outbreaks, four were foodborne, five were spread by person-to-person contact, and three outbreaks did not have a conclusive transmission route. No waterborne outbreaks were reported in 2001. The Food Protection Program and Long Term Care Program, in addition to lending valuable expertise and experience during outbreak investigations, also investigate a substantial number of food-related complaints and other clusters of illness for which the CDP never becomes involved.

Respiratory

Two respiratory outbreaks occurred in long-term care facilities. At least thirty residents and staff at one state hospital developed respiratory illness characterized by cough, nasal congestion, chest congestion and low-grade fever between May 3 and June 1. Four cases of pneumonia were confirmed by x-ray. Three residents were hospitalized overnight, and one resident died. Cases were confined to one particular ward, and transmission appeared to have occurred person-to-person. No airborne contaminant was identified through environmental sampling. No viral agent was identified through culture or serology. However, polymerase chain reaction (PCR) testing was not available to identify common bacterial agents of community-acquired respiratory infection. Residents and staff were given prophylactic azithromycin beginning May 25. Most residents and staff showed marked improvement after receiving prophylaxis, and the number of cases greatly decreased following prophylaxis.

At least 15 residents and staff at a private long-term care facility became ill with respiratory illness characterized by nasal congestion, cough, chest congestion and low-grade fever from July 5 to July 26. One case of pneumonia was confirmed by x-ray. No cases were hospitalized. Cases were confined to one particular ward, and transmission appeared to have occurred person-to-person. No viral agent was identified through culture or serology. Polymerase chain reaction (PCR) testing was not available to identify common bacterial agents of community-acquired respiratory infection. Symptoms were more consistent with viral infection; however, some residents reported lessening of symptoms after receiving antibiotics.

On October 30, the Hamilton County Health Department reported a large outbreak of respiratory illness among school children in the county. As of this writing, 149 cases, primarily among school children and their contacts, have been interviewed, with onsets ranging from August 1, 2001 to January 23, 2002. Transmission occurred person-to-person. Predominant symptoms include pneumonia, cough, chest congestion, body aches, fever (median 102.5°F), and chills. Ten of the cases have been confirmed positive by laboratory testing for *Mycoplasma pneumoniae*. In addition, fifteen cases of pertussis were identified during this outbreak, with onset dates occurring from October 15 to December 8. Five cases occurred among students at one high school, four others in a junior high, and three cases in one elementary school. One of the adult cases worked at the same elementary school as the three cases. Although direct links could not be found among all pertussis cases, some transmission is thought to have occurred in the school community and family settings. The investigation of this respiratory outbreak is still ongoing.

On December 14, the Shelby County Health Department reported a large outbreak of respiratory illness among students at Shelbyville High School. Preliminary lab testing revealed the cause of this outbreak as histoplasmosis. An investigative team from the Centers for Disease Control and Prevention (CDC) was invited by the Shelby County health officer to participate in the investigation, which included an environmental assessment and collection of blood specimens from students for laboratory testing at CDC. At this writing, testing has confirmed the causative agent as *Histoplasma capsulatum*, however, the exact number of cases is not known. The source of infection is suspected to be school air-intake ducts contaminated with spore-laden soil. Overgrown shrubs, which have been used extensively as bird roosts, were located adjacent to the ducts. These were removed in late October. On November 12, the soil under nearby trees had been turned with a rototiller, possibly creating an aerosol of spores. The first case among students appeared to occur the last week of November. The investigation into this outbreak continues.

Meningococcal Cluster

One probable case and three confirmed cases of meningococcal disease were reported in residents of Noble County. Diagnosis in a clinically compatible case is confirmed by isolating meningococci from a normally sterile site (e.g., cerebrospinal fluid (CSF), blood, synovial fluid, pleural fluid or pericardial fluid). A probable diagnosis may be made in the absence of a positive culture if clinical purpura fulminans is present or when both clinically compatible symptoms and a positive CSF antigen test are present.

The first case was a young child who attended preschool. Onset was June 9. The child was hospitalized and survived. The ISDH Laboratory identified the agent as *Neisseria meningitidis,* serogroup B. The other cases were reported during a three-week period beginning November 11, 2001. The following table describes these cases:

Onset Date	Age Group	Daycare Association	Case Status	Serogroup	Outcome
11/11/01	Child	Yes	Probable	N/A	Survived
11/29/01	Young Adult	No	Confirmed	B	Survived
12/2/01	Young Adult	No	Confirmed	B	Survived

The Centers for Disease Control and Prevention (CDC) was notified of the cluster. The probable case received several doses of antibiotics prior to collection of CSF. The CSF specimen was sent to CDC for further testing but the organism was not identified. The case with onset on 11/29/01 did not have the organism identified by the hospital laboratory. Serum was sent to CDC, and *N. meningitidis,* serogroup B was identified by the PCR. There was no isolate available for comparison with the other serogroup B cases identified. Isolates from the 6/9/01 and 12/2/01 cases were compared using pulse-field gel electrophoresis, and the isolates were only 55% similar. A public health investigation failed to determine an epidemiological association between any of these four cases. Close contacts received prophylactic antibiotics.

Foodborne/Gastrointestinal

Eight confirmed and four suspected outbreaks of Norwalk-like virus occurred in Indiana in 2001 (see table). Settings included long-term care facilities, restaurants/caterers, daycare centers, and homes. Four of the outbreaks were foodborne, five were attributed to person-to-person contact, and three did not have a conclusive route of transmission. Foodborne viral outbreaks usually occur when an infected person handles raw foods (salads, vegetables, etc.) or ready-to-eat foods (sliced luncheon meats, rolls, etc.) without thoroughly washing hands after using the restroom. Due to the extremely infectious nature of viral agents, they can also easily be transmitted from person to person via contaminated hands or surfaces. In most cases, there was a background of illness in food handlers or contact with others ill prior to the outbreak.

One outbreak of shigellosis occurred in Boone County. Throughout November and December, 24 cases were confirmed positive for *Shigella sonnei.* Sixteen of the cases attended the same daycare, eight attended a local elementary school, three attended a preschool, one attended a local high school, and two cases were at-home contacts. Transmission occurred person-to-person. Infection may have been introduced through an ill child who attended the daycare. Several daycare children were ill with diarrhea weeks before the outbreak, but were not diagnosed or treated. Once introduced into a vulnerable population, shigellosis can be difficult to control even with the most stringent measures, due to its highly infectious nature.

Based on experiences in disease investigation, the ISDH makes the following recommendations to local health departments for efficient and scientifically sound disease investigations:

- ***Ensure that everyone involved in the process is working together***. This may involve initial and even daily meetings among environmental and nursing staffs.
- ***Maintain supplies for outbreak investigations***. Inventory supplies to make sure you are equipped to investigate outbreaks. **Containers for collecting stool samples specific for bacterial and viral pathogens (7A) should be readily available. Be sure to check the expiration dates on the containers.** New containers can be ordered or expired ones replaced by calling the ISDH Containers Section at (317) 233-8104. Call (317) 233-7009 for information regarding specimen collection for respiratory outbreaks.
- ***If an outbreak is suspected, contact ISDH as soon as possible***. Gather basic information about the outbreak beforehand. For foodborne outbreaks, this information includes:

    - Type of event, location, date, number of meal(s) served and time of meal(s)
    - Source of food served (caterer, home, etc.) and contact person for the source
    - Number of exposed persons
    - Number of known ill persons
    - Range and times of illness onset
    - Main symptoms
    - Contact person for ill persons and phone number, if possible
    - Menu of all food and beverage items served
    - Availability of clinical and food samples

For respiratory outbreaks, obtain the following information:

- Location of outbreak
- Number of known ill persons
- Range and times of illness onset
- Main symptoms
- Contact person for ill persons and phone number, if possible
- Any laboratory results already obtained by private physicians
- Availability of clinical samples (i.e., are people still becoming ill)

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Important Telephone Numbers

To report suspected unusual incidence of disease or condition:
Indiana State Department of Health
Communicable Disease Program
317-233-7125 or 800-382-9480 and ask for Communicable Disease
8:15-4:45 EST

Routine infectious disease reports:
Indiana State Department of Health
Communicable Disease Program
317-233-7125 or 800-382-9480 and ask for Communicable Disease
8:15-4:45 EST

To speak with an epidemiologist:
Indiana State Department of Health
Communicable Disease Program
317-233-7125 or 800-382-9480 and ask for Communicable Disease
8:15-4:45 EST

Information about laboratory testing:
Indiana State Department of Health
Laboratories
Clinical testing information
Virology/Immunology (including Chlamydia & Gonorrhea)/HIV/Molecular Biology/Syphilis/Rabies: 317-233-8050
Clinical Microbiology: 317-233-8036
Containers: 317-233-8104 or 317-233-8105
Environmental testing information: 317-233-8077
Food sample testing: 317-233-7337
8:15-4:45 EST

After Hours Emergencies:
Indiana State Department of Health
Communicable Disease Program
317-233-1325
The answering service will notify the on-call epidemiologist
who will return your call.

SUMMARY OF DISEASE OUTBREAKS INVESTIGATED BY ISDH COMMUNICABLE DISEASE DIVISION

INDIANA, 2001

Month	County	Site	Description	Organism[1]	Most probable source	Local Participation	Comments[2]
January	Johnson	Long-term Care facility	Gastroenteritis 61 cases	Norwalk-like virus	Unknown	Johnson CHD	4 cases confirmed
February	Tippecanoe	State facility	Gastroenteritis 85 cases	Norwalk-like virus	Community	Tippecanoe CHD Indiana Veteran's Home	12 cases confirmed
March	Marshall	Restaurant	Gastroenteritis 25 cases	Unknown	Unknown	Marshall CHD	Probably viral
March	Hancock	Long-term Care facility	Gastroenteritis 109 cases	Norwalk-like virus	Unknown	Hancock CHD	4 cases confirmed
March	Dubois	Long-term Care facility	Gastroenteritis 31 cases	Unknown	Unknown	Dubois CHD	Probably viral
April	Allen	Daycare	Gastroenteritis 30 cases	Norwalk-like virus	Community	Allen CHD	5 cases confirmed
May	Wayne	State facility	Lower resp. infection 30 cases	Unknown	Infected staff member	Wayne CHD Richmond State Hospital	Probably bacterial
June	Allen	Mobile home park	Gastroenteritis 16	Norwalk-like virus	Unknown	Allen	4 cases confirmed
July	Bartholomew	Long-term Care facility	Respiratory infection 15 cases	Unknown	Community	Bartholomew CHD	Inconclusive
July	Marshall	Private park	Gastroenteritis 24 cases	Unknown	Unknown	Marshall CHD	Probably viral

Month	County	Site	Description	Organism[1]	Most probable source	Local Participation	Comments[2]
August	Hamilton	Community	Lower resp. Infection 149 cases[3]	*Mycoplasma pneumoniae* *Bordetella pertussis*	Community	Hamilton CHD	10 mycoplasmal cases confirmed 1 pertussis case confirmed
November	Boone	Daycare	Gastroenteritis 24 cases	*Shigella sonnei*	Infected child	Boone CHD	24 cases confirmed
November	Hamilton	Restaurant	Gastroenteritis 21 cases	Norwalk-like virus	Salad	Hamilton CHD	2 cases confirmed
November	Shelby	School	Respiratory infection Case count unknown[3]	*Histoplasma capsulatum*	Contaminated air-intake ducts	Shelby CHD	Unknown number of cases confirmed[3]
December	Tipton	Caterer	Gastroenteritis 18 cases	Unknown	Pea salad Broccoli salad	Tipton CHD	Probably viral
December	St. Joseph	Private residence	Gastroenteritis 12 cases	Norwalk-like virus	Raw broccoli	St. Joseph CHD	1 case confirmed

1. **Organisms culture-confirmed from stool samples, foods, other environmental sources, or determined by serologic testing.**
2. **Assessment of likely etiology based on incubation period, distribution of cases, and spectrum of symptoms shown.**
3. **Cases reported to ISDH as of February 6, 2002.**